556,489

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
25 November 2004 (25.11.2004)

PCT

(10) International Publication Number
WO 2004/101159 A2

(51) International Patent Classification[7]: B04B

(21) International Application Number: PCT/EP2004/050677

(22) International Filing Date: 3 May 2004 (03.05.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0311173.9 15 May 2003 (15.05.2003) GB

(71) Applicant *(for all designated States except US)*: **MANN+HUMMEL GMBH** [DE/DE]; Hindenburgstr. 45, 71638 Ludwigsburg (DE).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **SAMWAYS, Andrew** [GB/GB]; 67 Celtic Crescent, Dorchester Dorset DT1 2TD (GB). **FELL, Anthony, W.** [GB/GB]; 12 Long Close, Yeovil Somerset BA21 3SE (GB).

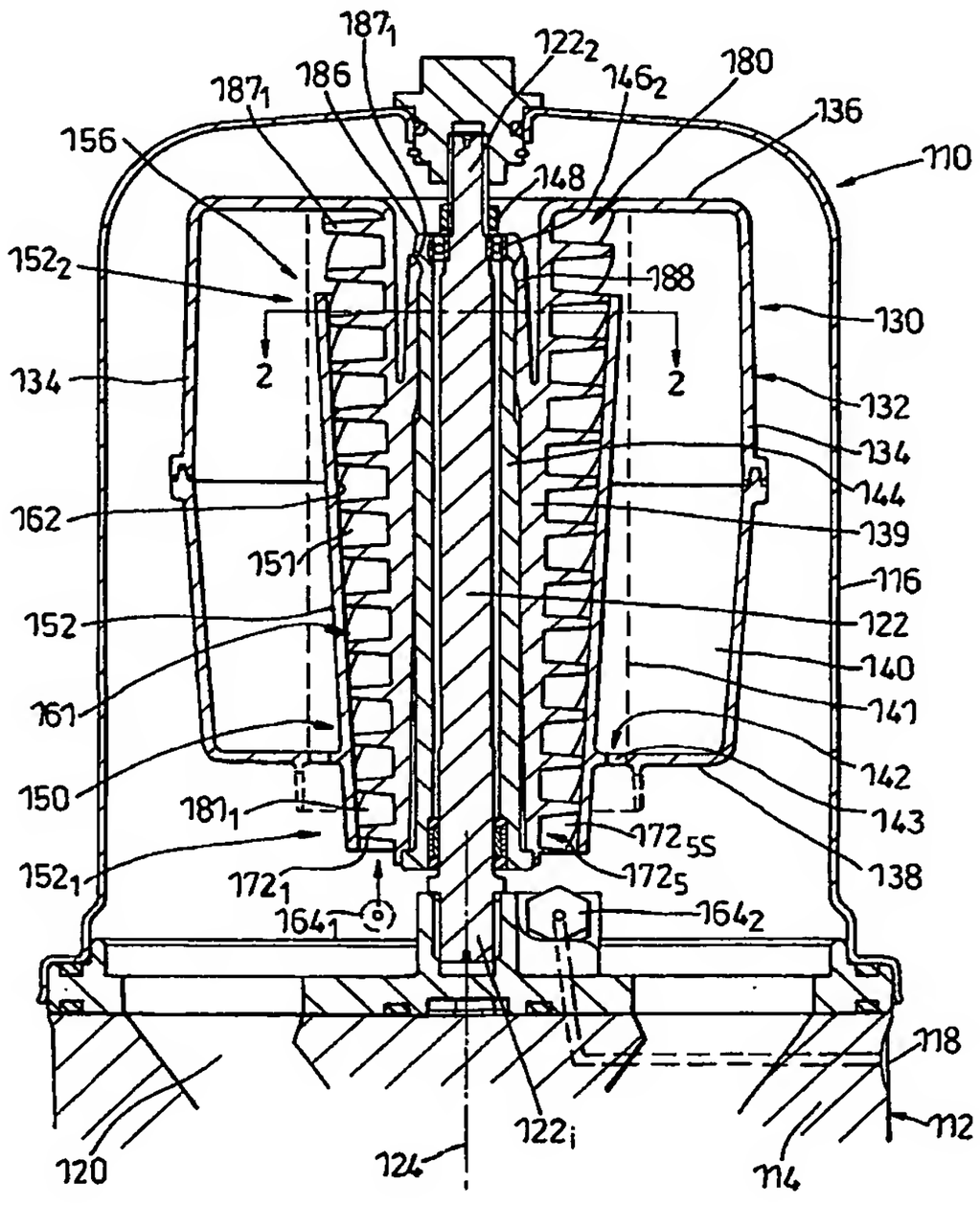
(74) Agent: **VOTH, Gerhard**; Hindenburgstr. 45, 71638 Ludwigsburg (DE).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

*[Continued on next page]*

(54) Title: CENTRIFUGAL SEPARATION APPARATUS AND ROTOR THEREFOR




(57) Abstract: A centrifugal separation rotor (130, Fig 1), for apparatus (110) that removes contaminants from a pumped liquid such as engine lubricant by rotating it about axis (124) at high speed, comprises a separation and containment vessel (132) having impervious side wall (134) spaced from the rotation axis and at least one end wall (138) open at (142) permit liquid to leave the vessel as fast as it can enter, so that a zone (140) is defined adjacent side wall (134) that holds a volume of liquid much less than the whole volume encompassed by the vessel walls and filled in conventional high speed separators. Lower inertia and reduced pressure gradients in the liquid permits it to be spaced further from the axis than is conventional, with improved separation efficiency. Liquid is supplied to an inlet region (151) defined by a tapered divider wall (152) surrounding the axis, one smaller diameter end ($152_1$) receiving liquid to be cleaned at the other, larger diameter end ($152_2$) forming one or more transfer passages (156) from which the liquid is flung centrifugally to the separation zone (140). The divider wall surface (162) is interrupted by a set of upstanding vanes ($181_i$) which extend along it and around the axle as a helix of such pitch as to form both collector vanes to guide liquid entering between the rotating vanes towards the transfer passage and motor vanes to receive one or more jets of liquid impinging thereon at a glancing angle to drive the rotor before being guided along the inlet zone.

WO 2004/101159 A2

FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— *without international search report and to be republished upon receipt of that report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*